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| 10/706,541 | 11/12/2003 | Gerolf Richter | 054821-0875 | 6887 |

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| EXAMINER |
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BERHANU, SAMUEL

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| ART UNIT | PAPER NUMBER |
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2838

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/706,541 | | RICHTER ET AL. | |
| | Examiner | | Art Unit | |
| | Samuel Berhanu | | 2838 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08/25/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9 and 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9, 11-15, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 16-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 17 and 20 are objected to because of the following informalities:

Claim 17 recites the limitation "constant a " in line 1, and "constant b" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

For examination purpose examiner assumed that Claim 17 is dependent upon Claim 16.

Claim 20, recites the limitation "the computer program" in line 1. There is insufficient antecedent basis for this limitation in the claim For examination purpose examiner assumed that Claim 20 is dependent upon Claim 19.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mentgen et al. (US 2002/0101243) in view of Okda et al. (US 5,949,217), and in view of Ng et. al. (US 2005/0089750).

Regarding Claim 9, Mentgen et al. disclose in Figures 1 and 2, a monitoring device for energy storage batteries comprising: a computation device (22) for determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Page 2, Paragraph

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0022); wherein the computation device is desired to carry out a method comprising: a method comprising determining the charge drawn by an energy storage battery starting from an initial state of charge at the start of the drawing of the charge (Paragraph 9, charging or discharging), the method comprising: determining the charge drawn as a function of an exponential function (Page 1, lines 1-25) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of the electrolyte temperature (Paragraph 18, it is inherent that the measuring the battery temperature incorporates the battery electrolyte, when the battery is hot so as the electrolytes, the battery is made of these electrolytes and its temperature is correlated with its electrolyte). However, Mentgen et al. do not disclose a device for measuring battery temperature.

Okda et al. disclose in Figure 1, a device for measuring battery temperature (Column 3, lines 5-9). It would have been obvious at the time of the invention to a person having ordinary skill in the art to add a temperature measuring means in Mentgen et al. device in order to avoid battery overheating.

Ng et. al. disclose paragraph 102 that the time constant is depend upon battery type. It would have been obvious to a person having ordinary skill in the art at the time of the invention to relate a time constant with battery type as taught by Ng et. al. in Mentgen et. al. device in order to obtain a time constant as low as possible in order to bring the battery at a specified operating rate with in a short period of time.

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4. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mentgen et al. (US 2002/0101243) in view of Hazel (5,381,096), and in view of Ng et. al. (US 2005/0089750)

Regarding Claim 11, Mentgen et al. disclose in Figure 1, determining the charge drawn as a function of an exponential function (Noted that soc is a charging result and one of the weight function is expresses in exponential form, please see formula 1 and 2) with a time constant, wherein the time constant is defined at least as a function of the energy storage battery type and of the temperature of the electrolyte (Page 2, Paragraph 18). However, Mentgen et al. do not disclose a computer program code designed to carry out a method when the computer program is run using a processor device, wherein the computer program is a program file stored on a data storage medium (74) (Column 10, lines 31-41). Hirzel discloses in Figure 8, a computer program code designed to carry out a method when the computer program is run using a processor device, where in the computer program is a program file stored on a data storage medium (74) (Column 3, lines 46-49, Column 10, lines 31- 41). It would have been obvious at the time of the invention to a person having ordinary skill in the art to modify Mentgen et al. device and use a computer program as taught by Hirzel in order to accurately calculates the state of charge of the battery.

Ng et. al. disclose paragraph 102 that the time constant is depend upon battery type. It would have been obvious to a person having ordinary skill in the art at the time of the invention to relate a time constant with battery type as taught by Ng et. al. in Mentgen et. al. device in order to obtain a time constant as low as

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possible in order to bring the battery at a specified operating rate with in a short period of time.

Regarding Claim 12, Mentgen et al. disclose the time constant is also defined as a function of the state of charge at the start of the drawing of the charge (Paragraph 18).

Regarding Claim 13, Mentgen et al. disclose the time constant is also defined as a function of at least one of a charging voltage, a mean charging voltage and a rated charging voltage (Page 1, Paragraph 9)

Regarding Claim 14, Mentgen et al. disclose in Equation 1 and 2 in page 1 paragraphs 6-9, the absolute amount of charge drawn according to the function

$$\Delta Q \approx (1 - e^{-t/\tau}) (Q_o - Q_s),$$

where ΔQ is the absolute amount of charge drawn, Q_o is the defined rated capacity of the energy storage battery, and Q_s is the initial charge of the energy storage battery at the start of the drawing of the charge. (Page 1, paragraph 6-7)

Regarding Claim 15, Mentgen et al. disclose in Equation 1 and 2 in page 1 determining the relative state of charge of the energy storage battery with respect to the rated capacity of the energy storage battery according to the function:

$$Q_t(t)/Q_o \approx 1 - (1 - Q_s/Q_o)^{-t/\tau}$$

where $Q(t)/Q_o$ is the relative state of charge of the energy storage battery, Q_o is the rated capacity of the energy storage battery, and Q_s is the initial charge of the energy storage battery at the start of the drawing of the charge (Page 1, paragraph 6-7).

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5. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mentgen et al. (US 2002/0101243) in view of Okda et al. (US 5,949,217), and in view of Ng et. al. (US 2005/0089750), further in view of Hirzel (5,381,096).

Regarding Claim 19, neither Mentgen et al. nor Okada et. al. disclose explicitly, a computer program comprising computer program code designed to carry out the method when the computer program is run using a processor device. However, Hirzel discloses in Figure 8, a computer program code designed to carry out a method when the computer program is run using a processor device. It would have been obvious at the time of the invention to a person having ordinary skill in the art to modify Mentgen et al. device and use a computer program as taught by Hirzel in order to accurately calculates the state of charge of the battery.

Regarding Claim 20, Hirzel discloses where in the computer program is a program file stored on a data storage medium (74) (Column 3, lines 46-49, Column 10, lines 31- 41).

Allowable Subject Matter

6. Claim 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claim 16: primarily, the prior art of record does not disclose or suggest in the claimed combination: a first correction factor for the time constant, the first correction factor being determined using the formula:

$$\tau_T = a^{-\frac{(T_e - T_{e,0})}{b}}$$

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where τ_T is the first correction factor, T_e is the electrolyte temperature of the energy storage battery, $T_{e,0}$ is a defined electrolyte nominal temperature, and a and b are constants.

Regarding Claim 18: primarily, the prior art of record does not disclose or suggest in the claimed combination: a second correction factor for the time constant, the second correction factor having a value between 1 and $1 - Q_s/Q_0$.

7. Claim 17 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claim 17 is considered by the examiner as being dependent upon Claim 16 rather than Claim 15, since what is in these claims are to be found in claim 16 not in Claim 15.

Response to Arguments

8. Applicant's arguments filed 01/06/06 have been fully considered but they are not persuasive, or moot in view of new ground(s) of rejection.

9. In response to applicant's arguments, the recitation "monitoring device" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*,

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187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Noted also that the temperature measuring means disclosed by Okda et. al can be considered as a monitoring means.

Applicant argues that there is no teaching or suggestion in Mentgen et al." wherein the time constant is defined at least as a function of the electrolyte temperature " This is incorrect.

Mentgen et al. disclose in Figure 1, a time constant, defined as a function of battery temperature (see paragraph 018). A battery consists of electrolytes, so the battery temperature is the temperature of the electrolytes.

10. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Hrizel discloses and taught in Col.11, lines 8-15, that the computer system or the digital system is providing accurate charge calculation method.

Conclusion

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB



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